

# DRAFT

**Engineering Evaluation Report  
Mercurio Brothers Printing  
2830 San Pablo Avenue  
Berkeley, CA 94702  
Plant # 16414  
Application # 10736**

## I. BACKGROUND

Mercurio Brothers Printing is applying for a Permit to Operate (PO) the following equipment:

**S-1 Printing Presses (4) consisting of:**

Lithograph Printing Press; Hamada 700 LD, 1 color unit

Lithograph Printing Press; Heidelberg SORD, 1 color unit

Letterpress Printing Press; Heidelberg Windmill, 1 color unit

Lithograph Printing Press; Komori Sprout 25 Model 425BP, 4 color unit

This facility has been in operation since 1969 and is a family owned business. The current owner took it over from his father in the mid 1990's. Three presses were installed in early 1997, and the fourth was installed in mid 1998. All four presses were installed without obtaining an Authority to Construct. Late fees have been assessed. This facility is in operation 5 days a week and 52 weeks per year.

## II. EMISSIONS CALCULATIONS

Table 1 summarizes the precursor organic compound emissions from inks, varnishes, press washes, etc. that are used at S-1.

**Table 1**

Material		Annual Usage	VOC	Daily Emissions <sup>1</sup>		Annual Emissions	
		(gals/yr)	(lbs/gal)	Assuming 365 days/yr	Assuming 260 days/yr	(lbs/yr)	TPY
<b>All Litho Inks and Varnish</b>	Litho Printing Ink	780	2.50	5.34	7.5	1950	0.975
<b>Blanket/Roller wash</b>	Powerklene WM Special	140	6.69	2.57	3.60	936.6	0.47
<b>Fountain Solution</b>	3451 U	20	0.73	0.04	0.06	14.6	0.007
<b>Clean-up solvent</b>	IPA	50	6.55	0.90	1.26	327.5	0.16
<b>TOTAL</b>		<b>990</b>		<b>8.85</b>	<b>12.42</b>	<b>3228.7</b>	<b>1.612</b>

III.

**TOXIC RISK SCREEN ANALYSIS**

Table 2 summarizes the Toxic Air Contaminant (TAC) emissions from the use of inks, varnishes, press washes, etc. at S-1.

**Basis:**

Review of the Material Safety Data Sheet indicated the existence of the following toxics:

<b>TAC</b>	<b>Weight - Percent</b>	<b>Usage (lbs/yr)</b>
Copper	40.5	12.5
Zinc	13	12.5
Xylene	10-23 (Max)	1950
Aliphatic Petro Distillate (C9-C11)	50	936.6
2-Butoxyethanol	10	14.6
Isopropanol –100%	100	327.5

**Sample Calculations:**

Xylene- (Assuming 23% for all the inks varnishes)

$$(1950 \text{ lbs/yr})(0.23) = 448.5 \text{ lbs/yr}$$

Copper

$$(12.5 \text{ lbs/yr})(0.405) = 5.06 \text{ lbs/yr}$$

**Table 2**

<b>TAC</b>	<b>TACs (lbs/yr)</b>	<b>District's Toxic Trigger Levels (lbs/yr)</b>	<b>Exceeds Toxic Trigger Levels? (Yes or No)</b>
Copper	5.06	463	No
Zinc	1.63	6760	No
Petroleum Hydrocarbons Xylene	448.5	58,000	No
Aliphatic Petro Distillate (C9 - C11)	468.3	83,000	No
2-Butoxyethanol	1.5	3,900	No
Isopropanol (IPA)	327.5	440,000	No

Table 2 shows that a Toxic Risk Screen Analysis is not required since all the TAC emissions are below the District established TAC trigger levels.

**IV. CUMULATIVE INCREASE**

Table 3 summarizes the cumulative increase in emissions for this application.

<b>Pollutant</b>	<b>Increase in Emissions At Plant Since April 5, 1991 (TPY)</b>	<b>Increase in Emissions Associated With This Application (TPY)</b>	<b>Total Emissions (Post 4/5/91 + Increase) (TPY)</b>
POC	0	1.612	1.612

**V. BACT ANALYSIS**

As per Regulation 2, Rule 2, Section 301, BACT 1 is triggered, since the POC emissions are in excess of 10 lbs per highest day. BACT 1 requires the installation of a carbon adsorber. Cost analysis using EPA's Control-Air program shows that the estimated annual cost for a carbon adsorber is approximately \$32,423. In accordance with BACT guidelines, the maximum cost for installing abatement equipment to abate VOC emissions to comply with Regulation 8-20 is \$17,500 per ton. The emissions from this operation are 1.612 tons per year, which means the cost shall not exceed \$28,210. Therefore, it is not cost effective for the applicant to install abatement equipment. This facility will comply with BACT by using complying inks and varnishes.

**VI. OFFSETS ANALYSIS**

Since the increase in POC emissions for S-1 is below the District's POC offset trigger level, offsets are not required.

**VII. CEQA REVIEW**

This application is considered to be ministerial under the District's CEQA guidelines (Regulation 2-1-311) and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 5.4, Graphic Arts Printing And Coating Operations.

**VIII. STATEMENT OF COMPLIANCE**

S-1 is subject to and in compliance with Regulation 8, Rule 20. Specifically, the inks, varnishes and fountain solution are required to comply with the VOC product limits outlined in Section 302.

The fountain solution is formulated as follows: 1 gallon water + 10 oz IPA + 3 oz fountain solution concentrate. This mixture has a VOC content of less than 8% by volume and complies with the product limit for fountain solutions outlined in Regulation 8-20-302.

The blanket and roller wash's VOC Composite Partial Pressure is 2.7mm Hg @ 20 degrees C. The wash's VOC composite partial pressure is less than 10 mm Hg @ 20 degrees C and complies with the limit for blanket and roller wash outlined in Regulation 8-20-309.

Compliance with the solvent evaporative loss minimization requirements will be established through inspection. Recordkeeping requirements are incorporated into the proposed permit conditions.

PSD, NSPS and NESHAPS are not triggered.

Mercurio Brothers Printing is located within 1000 feet of the following school:

***French American School – Berkeley Unified School District***  
***1009 Heinz Avenue***  
***Berkeley, CA***  
***510 549-3867***  
***School Enrollment: Approximately 600 students***

Mercurio Brothers Printing is subject to the public notification requirement of Regulation 2-1-412. A public notice will be prepared and posted on the Internet and mailed to all parents and guardians of students enrolled at French American School. It will be mailed to all residential neighbors located within 1000 feet of the source of pollution.

**IX. PERMIT CONDITIONS**

1. Except as allowed By Condition #3, the owner/operator shall not exceed the following usage limits for materials used at S-1 in any consecutive 12-month period:

a. Inks and Over-print Varnish	780 gallons
b. Powerklene WM Special (Printer's Service)	140 gallons
c. Fountain Solution 3451 U (Printer's Service)	20 gallons
d. Isopropyl alcohol	50 gallons

(Basis: BACT, Cumulative Increase)
2. The owner/operator shall comply with the following standards when operating S-1:
  - a. The VOC content of all inks and varnishes used shall not exceed 2.5 pounds of VOC per gallon as applied, less water.
  - b. The fountain solution used in the presses shall not contain more than 8 percent VOC by volume.
  - c. The press and roller washes used at S-1 shall comply with any one of the following requirements:
    1. VOC, including water shall be less than or equal to 2.5 pounds per gallon; or
    2. VOC composite partial pressure shall be less than 10 mm Hg at 68 degrees Fahrenheit.
  - e. Isopropyl Alcohol I (IPA) shall not be added to any press and roller washes.

(Basis: BACT, Regulation 8-20-302, Regulation 8-20-309)
3. The owner/operator may use coatings and cleanup solvents other than the materials specified in Condition 1, and/or usage may exceed the quantities specified in Condition 1, provided they can demonstrate that both of the following requirements are satisfied:
  - a. Total POC emissions from S-1 do not exceed 3228.7 pounds in any consecutive 12-month period.
  - b. The usage of these materials does not increase toxic emissions above any risk screening trigger level listed in Table 2-1-316 of Regulation 2, Rule 1.

(Basis: Cumulative Increase, TRMP)
4. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions, including, but not necessarily limited to, the following information:

- a. Type and monthly usage of all POC containing materials used;
- b. If a material other than those specified in Condition 1 is used or a material specified in Condition 1 is used in excess of the limit in Condition 1, POC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Condition 3 on a monthly basis;
- c. Monthly usages of all coatings and cleanup solvents used at S-1 and their pertinent emission calculations shall be totaled for each consecutive 12-month period.

(Basis: Cumulative Increase, TRMP)

**X. RECOMMENDATION**

I recommend that a conditional Permit to Operate be issued to Mercurio Brothers Printing for the following source:

**S-1 Printing Presses (4) consisting of:**

Lithograph Printing Press; Hamada 700 LD, 1 color unit

Lithograph Printing Press; Heidelberg SORD, 1 color unit

Letterpress Printing Press; Heidelberg Windmill, 1 color unit

Lithograph Printing Press; Komori Sprout 25 Model 425BP, 4 color unit

By: \_\_\_\_\_  
Nancy Yee  
Air Quality Engineer

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Date